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PATENT
1503-1054

IN THE U.S. PATENT AND TRADEMARK OFFICE

In re application of

Stefan JOHANSSON Conf. 8453

Application No. 10/697,290 Group 2834

Filed October 31, 2003 Examiner T. Dougherty

PERISTALTIC ELECTROMECHANICAL ACTUATOR

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Assistant Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

August 8, 2006

Sir:

Applicant requests a pre-appeal brief review of the final rejection in the above-identified application. No amendments are being filed with this request.

A Notice of Appeal is filed herewith.

The review is requested for the reasons advanced on the attached sheets.

Respectfully submitted,

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REASONS IN SUPPORT OF REQUEST FOR REVIEW

A pre-appeal brief review is respectfully requested because the rejections of independent claims 1, 16, and 25 include at least a clear factual error, or in the alternative, a clear legal error, as explained below.

Applicant requests review of the final rejection of claims 1, 3-7, 9-16, and 18-26 as obvious over ROBERTSON in view of ZUMERIS, and (for claims 12, 15, 25 and 26) in further view of BAUDENDISTEL.

The Examiner acknowledges that ROBERTSON does not show a means for providing normal forces between the recited body and the recited peristaltic actuating element. The Examiner offers ZUMERIS for this teaching and asserts that it would be obvious to modify ROBERTSON in view of ZUMERIS.

The motivation to combine is faulty and is based on clear error as ROBERTSON and ZUMERIS are different type devices operating differently and with different operational requirements. Further, the proposed modification will degrade the performance of ROBERTSON. Still further, even if combined, not all recited features would be present in the ROBERTSON-ZUMERIS combination.

In this regard, the Examiner has totally neglected the geometrical considerations of ROBERTSON. Even if many conditions are similar between cylindrical symmetries and linear symmetries, there are also significant differences

which are of crucial importance in the present case yet neglected by the Examiner when making the pending obviousness rejections.

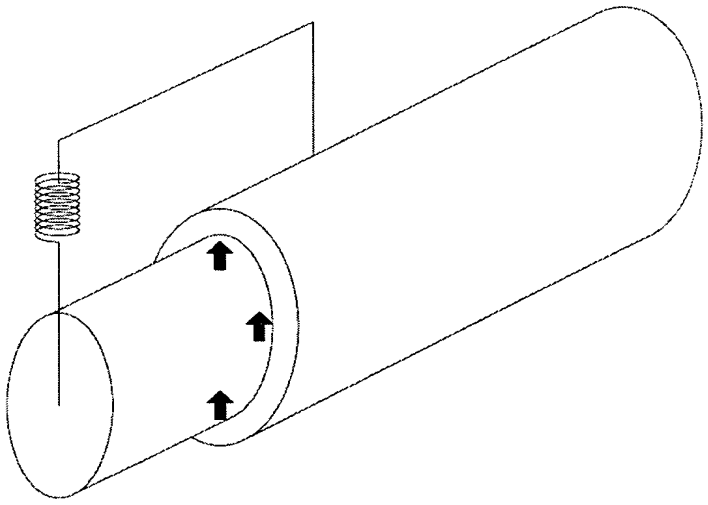
The piezoelectric embodiment in ROBERTSON (illustrated by Figure 4) "includes a rod member 51 telescopically mounted in tight fitting relationship for slidable movement within a sleeve member 52.

The sleeve member 52 is comprised of a plurality of ring-like discs 53 through 64 stacked in end to end relationship and rigidly interconnected." (see column 3, lines 36-40). It is thus evident that the piezoelectric material encloses the rod to be moved in a tight relationship. This tight fitting is necessary when the "rod-in-sleeve" geometry is utilized. In order for the actuator of ROBERTSON to operate, there has to be a close fitting between the rod and the sleeve, since the piezoelectric material encircles the rod and operates on the rod from every direction.

For a non-circular symmetry solution, the situation is completely different and a tight fitting is not necessary. The interaction between the actuator and the body to be moved may instead be ensured by applying a normal force between the body and the actuating element. This reduces the requirements on machining accuracy during manufacturing. Instead, an additional arrangement is

necessary. A typical example of normal force application is indeed shown in ZUMERIS.

However, returning to ROBERTSON, in the case of cylindrical symmetry, the very fundamental benefit is that actuating can be provided around the entire cylinder surface, thereby increasing the maximum force that is applied for motion purposes. This is, at least theoretically, a volume efficient way to produce motion forces. However, as mentioned above, one drawback is the need for very accurate fitting of the rod into the cylinder to insure the contact around the entire rod surface.



In the case of cylindrical symmetries, there is thus basically no need for applying any external normal force between actuator and body to be moved, since the close relationship is arranged in another way. Furthermore, if anyone anyway would apply a force between the body and the actuator, this normal force will only serve as a normal

force in one direction. In other directions, the force will act as a tangential force and at the opposite side, the force will instead act to remove the body from the actuator, as illustrated above.

By applying a force between the body and actuator in a cylindrical symmetry arrangement will degrade the operation instead of improving it, since the entire circumference of the cylindrical actuator cannot be used any more for actuating purposes. The efficiency/performance will thus decrease.

One skilled in the art of piezoelectric motion will understand that in ROBERTSON there is no need for any normal force with such a geometry solution. Furthermore, it is absolutely obvious for one skilled in the art that if a normal force should nonetheless be applied, the total efficiency/performance will be decreased. One skilled in the art would therefore never even think about trying to combine the normal force application of ZUMERIS and the embodiments presented in ROBERTSON.

In the present claim 1, a means providing normal forces between the body and the peristaltic actuating element is defined to be present. According to the discussion above, such a means is by natural reasons not present in ROBERTSON nor desirable in ROBERTSON. Also according to the above discussions, it is not obvious or advantageous for one skilled in the art, to provide the

embodiments of ROBERTSON with any normal force applying means according to ZUMERIS, since such trials should be detrimental for the operation of the embodiment of ROBERTSON.

In the Official Action under "response to arguments", applicant has pointed out that the embodiment of ROBERTSON will clamp the actuator against the rod when the actuator is excited. A cylindrical body will decrease both its outer and inner diameter when having the length expanded, such as described in ROBERTSON column 3, lines 55-62. This confirms that the feature of claim 1 "the volumes of piezoelectric material and the electrodes being arranged to further cause the interaction surface within the peristaltic section to be removed from the body to be moved within the peristaltic section simultaneously as the change in dimension difference parallel to the main motion direction" is not disclosed in the piezoelectric embodiment of ROBERTSON or the ROBERTSON-ZUMERIS combination.

Conclusion

From the above, the obviousness rejection is based on clear factual error and clear legal error. Withdrawal of the obviousness rejection is therefore respectfully requested.